SYMONS'S
MONTHLY
METEOROLOGICAL MAGAZINE.

CCCLXII.] MARCH, 1896. [PRICE FOURPENCE, or 5s. per ann. post free.

EXTREME HEAT IN AUSTRALIA IN JANUARY, 1896.

THE Australians have had a very hot January, and in some parts hot beyond all precedent. We therefore give not merely the details, which Mr. H. C. Russell, F.R.S., has been so kind as to send from Sydney, but also a selection of notes and articles from various issues of the Melbourne *Argus*. It would, of course, be presumptuous for us to pretend to compile a record of the phenomena at our antipodes; but seeing the exceptional character of January and February in the British Isles, and the severity of the winter in parts of North America, we think that some popular notes of Australian weather at the same time may be interesting.

To the Editor of the Meteorological Magazine.

SIR,—I send the enclosed readings of the thermometers on our record day. I felt what was coming when I rose in the morning, and determined to follow the temperature by frequent readings. Both the thermometers are first-class; the Standard has a Kew certificate of + 0·1 at 72°, 82°, and 92°; of + 0·2 at 102°, ; and 112°, and the max. a certificate of no error from 32° to 92°. I have not applied the correction to the Standard; had I done so, the Standard readings at 1.20 p.m. would have agreed with the max., and at 2 p.m. have been 108°·7; but when the temperature is oscillating as it was at the top of the heat wave, I do not expect to get the temperature to a tenth of a degree. The cause of the heat was a hot land wind.

We are having a very hot summer. We have already had 95°·2 on 4th, 105°·2 on 6th, 98°·5 on 10th, 100°·0 on 11th, 108°·5 on 13th, and 99°·0 on 18th. I send you my pamphlet about icebergs. Those who hold that icebergs cool the weather will have a nut to crack with the icebergs on one hand, and these excessive heats on the other.—Yours faithfully,

H. C. RUSSELL.

Sydney Observatory, January 20th, 1896.

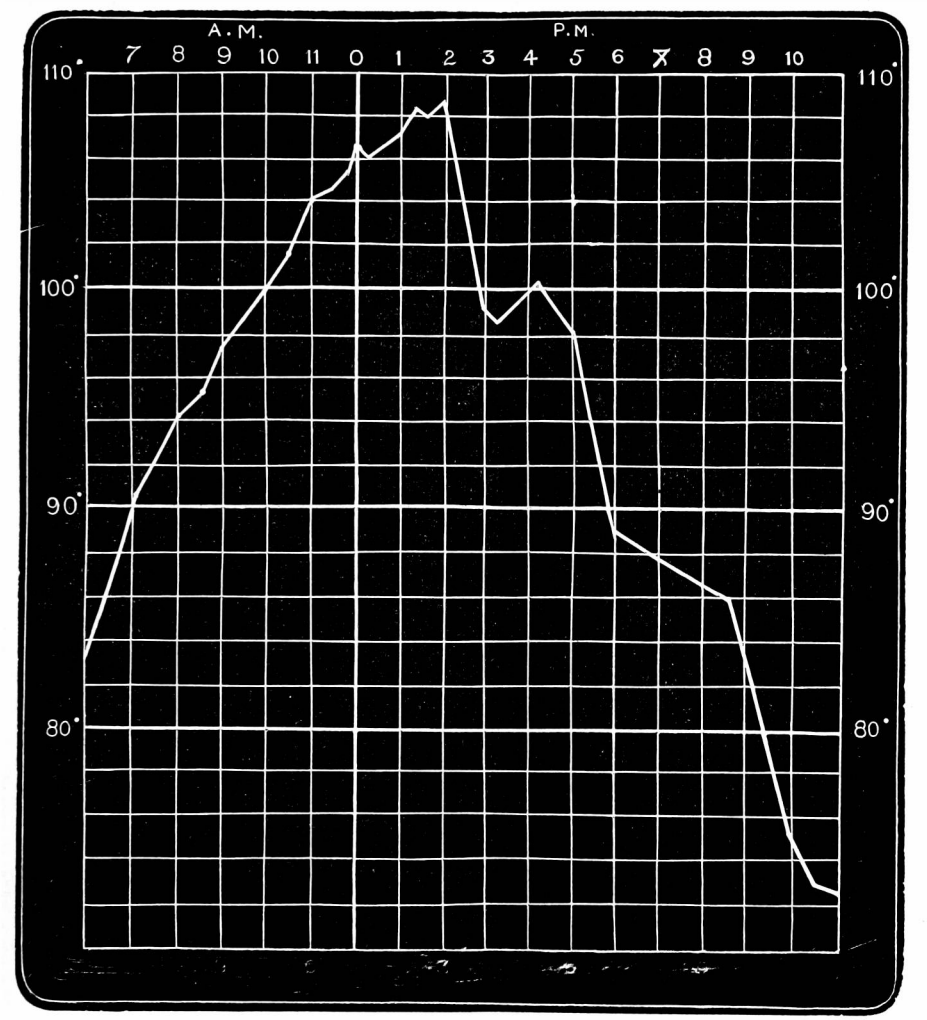
Shade Temperatures at Sydney, January 13th, 1896.

Time.	A Kew Standard Thermometer.	First Class Max. Kew Certificate.	
	°	°	
6.0 a.m.	83·6		Temps. at 6, 7, and 8 taken from thermograph.
7.0 ,, ...	90·7		
8.0 ,, ...	94·3		
8.30 ,, ...	95·6	95·7	
9.0 ,, ...	97·7	97·6	
9.30 ,, ...	99·0	99·0	
10.0 ,, ...	100·0	100·0	
10.15 ,, ...	101·0	101·1	
10.30 ,, ...	101·9	101·9	
11.0 ,, ...	104·0	104·0	
11.15 ,, ...	104·2	104·4	
11.30 ,, ...	104·9	105·5	
11.45 ,, ...	105·4	105·7	
Noon	106·5	106·2	
0.3 p.m.	106·4	106·6	
0.15 ,, ...	106·2	106·9	
0.22 ,, ...	106·7	106·9	Humidity 25 by Indian Tables.
0.30 ,, ...	106.9	106·9	,, 26 ,, ,,
0.45 ,, ...	107·0	107·2	
0.55 ,, ...	107·0	107·4	,, 26 ,, ,,
1.10 ,, ...	108·0	108·2	,, 26 ,, ,,
1.20 ,, ...	108·3	108·5	
1.30 ,, ...	108·0	108·5	
1.45 ,, ...	108·2	108·5	
2.0 ,, ...	108·5	108·5	,, 22 ,, ,,
3.0 ,, ...	98·9	108·5	At 2.30 p.m. the fresh N.W. wind had died out and a light sea breeze came in.
3.15 ,, ...	98·5	108·5	
4.18 ,, ...	100·1	108·4	
5.0 ,, ...	98·0	108·3	Contraction of mercury.
6.0 ,, ...	88·7	108·2	
8.40 ,, ...	86·0	...	Wind changed to Southerly Burster at 9.30 p.m.
10.0 ,, ...	75·3	...	
10.30 ,, ...	72·8	...	
11.45 ,, ...	72·0	...	

This is the Sydney record day, the greatest heat ever known, certainly since 1859. Our record before was in January, 1863, 106° 9, when it rose quickly, *i.e.*, in 3 hours, and the sudden advent at 1 p.m. of a violent Southerly Burster cooled down the air 22° in 15 minutes. Our present record is remarkable not only for its heat but for its persistence.

In taking the readings I observed that if I happened to go when the temperature was rising, the thermometers agreed.

Shade Temperature at Sydney, N.S.W., January 13th, 1896.



A HOT DAY IN MELBOURNE.

108 DEG. IN THE SHADE.

It will hardly surprise those who had business in the city yesterday (January 23rd) to learn that the day was the hottest we have had for several years, though not, as many ventured to prophesy, the hottest on record. Three times during the many years that heat records have been kept in the Melbourne Observatory the temperature of yesterday was exceeded. The highest register was in January, 1862, when the shade temperature reached 111°·2. In 1876, 110°·7 was registered, and 110°·5 in the summer of 1882. With one exception, therefore, it will be seen yesterday, with a record in the shade of

108 deg., was the hottest day we have had in Melbourne for 20 years—a record quite sufficient to cause it to be remembered. The excessive heat was largely due to the burning north-west wind blowing, and although many casual weather prophets had declared that some of the excessive heat of Riverina might be expected here, they were correct in their prophecy only by the purest chance. The Western Riverina heat cannot, save under exceptional conditions, affect us, and yesterday's record was purely a local achievement—happily with sound local characteristics, too, inasmuch as a cool wind came suddenly up from the south at about 5 o'clock, and in about 10 minutes the thermometer fell 20 degrees. The change was the more agreeable inasmuch as it was totally unexpected, no electric couriers having announced its coming at the Observatory. Ten minutes before it came the best that Mr. Baracchi could promise from the chart was a change within 24 hours. This cool burst came from off the west Tasmanian coast, and thus none of the Observatory outposts were able to announce its coming until it was absolutely here. The first sign of it in the city was a dense cloud of dust, and Melbourne, as seen from the outlook at the Observatory, was then a remarkable sight.

The excessive heat now experienced in New South Wales is largely due to the dry state of the country, for when there is little moisture in the air or soil such high records are to be expected. For the last few months our local rainfall in the south of Victoria has been up to the average, and the excessive heat in Melbourne yesterday is attributable almost entirely to the dry hot wind blowing. As showing the effect of moisture on the temperature, it is worth pointing out that at Port Darwin the temperature rarely exceeds 95°, owing to the moisture in earth and air, and the heat in these northern areas is the more trying solely because it remains pretty well the same night and day. Rarely is a sudden change with thunder and cooling showers such as followed yesterday's heat in Melbourne experienced in Western Riverina, so that those who judge the heat privations of that part of the country from what was experienced in Melbourne yesterday altogether underrate the sufferings of the people across the Murray.

THE HEAT IN THE COUNTRY.

The heat was very general throughout the colony, as the following advices from our correspondents, giving the record of the shade temperature at the different places, will show:—

All in Victoria.

Ararat, 99; Avenel, 108.
Ballarat, 102·5; Bendigo, 110; Bridgewater, 112.
Castlemaine, 104; Charlton, 110; Cobram, 107.
Donald, 112; Dunolly, 106; Drouin, 100.
Euroa, 104; Echuca, 112.
Frankston, 108.
Geelong, 110; Gisborne, 108.
Hopetoun, 113; Horsham, 112.
Kerang, 110; Kilmore, 105.
Minyip, 110; Macedon Upper, 101; Mildura, 120; Murchison, 109·5.
Nagambie, 110; Natimuk, 115.
Pakenham, 108.
Rupanyup, 114.
Swan Hill, 116; St. James, 110; St. Arnaud, 110; Somerville, 104.
Tatura, 110; Tallarook, 106; Traralgon, 104.
Wedderburn, 113; Wangaratta, 109.
Yarrawonga, 112.

The flame-like sunshine—beneath which, over wide spaces of Australian soil, the grass is just now being turned into dust and the rivers into vapour—is not the most scorching element in the weather about which we are all grumbling. According to Mr. Russell, the Government Astronomer of New South Wales, the action of the sun is turning the waterless plains of the interior into the breeding ground of heat waves, which, with the breath of a thousand furnaces, come romping over cities and plains until the whole continent faints and droops under their white-hot ardours.

The heat wave has been sufficiently scorching in Victoria, but it has reached its highest intensity in New South Wales. The lamenting journals of that colony, for example, betake themselves to mediæval Latin to describe the horrors of a given day, a true *dies iræ!* On that day, indeed, the mercury in the thermometer only registered 108°, and there are traditions that on a yet more dreadful day in 1854, Sydney thermometers registered 113°. But Sydney heat has a most clinging and vaporous quality, under which the figures of the thermometer are helplessly inadequate as a measure of human discomfort. But even at 108° the bank of superheated steam drifted over the city roofs and out to sea, and 150 miles from the coast the ships that ran into it describe the experience as running into "a bank of flame." The human imagination turns aside from the spectacle presented by, say, Bourke, Wilcannia, or Camden. At Bourke the thermometer, for a whole week, oscillated between 113° and 121°. At Wilcannia 119° was a familiar record, and the airless heat of the nights was, on the whole, more cruel than the scorching glare of the day. In Camden, unless thermometers can lie, the heat rose to 123°. At the present moment apparently the perspiring crowds are fleeing from Bourke as the inhabitants of Pompeii fled from that city when Vesuvius was pouring upon it its tempest of burning ashes. Not a few pastoral towns in western New South Wales, as a matter of fact, threaten to be abandoned by their scorched inhabitants, and no wonder, for the heat wave is as cruel and as deadly as an average pestilence. Twenty-two deaths were registered in Bourke in five days; five deaths at Wilcannia were registered in a single day; in Sydney the heat wave wave killed 125 persons in one week. Professor Stuart, it is true, with the cold composure of science, assures the panting inhabitants of Sydney that "damp, muggy, and cold weather" kill more people than the most fervent heat wave. But the people of New South Wales at the present moment would probably welcome the frozen fogs of the North-West Passage as an exchange for the heat, as of a fever ward, or of a gas furnace, which is killing the very mosquitoes in New South Wales gardens. It is certain that across the mortality tables of 1895 the heat wave will scribble statistics which might alarm even a committee of undertakers.

The critics who are always glad to discover some scandal about the Australian climate need not rejoice too triumphantly. New York, for example, which alternates between a blizzard and a sun-bath, has worse records than Bourke or Wilcannia. On a given day in 1892, when the mercury in New York thermometers oscillated between 99° and 102°, no fewer than 223 deaths from excessive heat were registered in twenty-four hours. That particular American heat wave killed 600 people in three days in New York alone! In the matter of heat waves the foreign article, it is clear, is more deadly than even our local variety!—"*Argus*," 24*th January*, 1896.

Bush Fires in Gippsland.

Mirboo North, Jan. 9th.—The weather is very sultry, and bush fires are surrounding the township. Great damage has been done in the Allambee district. Messrs. Euring, Barton, Smith, Davies, O'Shea, and others have suffered a loss of grass, fencing, and in other ways, and it was only with difficulty that the fire could be kept within bounds. The selectors are working determinedly to subdue the flames, but the fires are still raging in different parts.

Bendigo, 9th.—The thermometer registered 99 deg. in the shade to-day. Rain is now promising.

Boort, 9th.—The weather has been very close for the past few days, reaching the exceptionally high register to-day of 112 deg. in the shade. The lakes are rapidly drying up. A welcome change appears to be coming, as heavy clouds are rising in the north-east.

Foster, 9th.—No rain has fallen to stay the ravages of the bush fires, the result being that the town is enveloped in smoke. No fires are reported from Stony Creek proper, nor from Fish Creek. To-day is very warm and sultry, with not a breath of air stirring.

Hopetoun, 9th.—To-day was the hottest day of the season, the thermometer showing 109 deg. in the shade.

Mildura, 9th.—The heat to-day was very intense, a hot, scorching wind blowing. The thermometer registered 114 deg. in the shade. About 5 o'clock there was a blinding dust storm, accompanied by light thunder. There were a few spots of rain only, but more seems pending. This is the record of heat for this summer.

Macarthur, 9th.—The excessive heat continues, being almost a repetition of Sunday (5th). Bush fires continue burning, and to-day the fire has crossed from Werrangourt into Eumerala West and Knebsworth. Mr. Donald Cameron had a narrow escape from losing his dwelling-house. This evening the fire entered the Braes Estate, and the properties of Messrs. Brankie, Mills, Quirk and Christie are in imminent danger. Owing to the high wind little can be done to check the flames. Rain is badly needed, as the crops are suffering and the grass is parched.

The Weather in the Other Colonies.

Brisbane, Jan. 9th.—Splendid rain is falling throughout the agricultural portion of the Mackay district.

Broken Hill, 9th.—It was very warm locally to-day, 111 deg. being registered in the shade at midday. After 1 o'clock, however, it increased to 113 deg., being the record for the season. It was very dusty throughout the morning, and in the afternoon a whirlwind of a cyclonic character came from the west down Oxide Street. One or two small habitations were wrecked and a verandah was carried away, and sheets of iron were gyrating aloft in all directions. The damage, however, was not serious, and no accidents are recorded. It is cooler this evening, with a heavy bank of clouds.

"*Argus*," 10*th January*, 1896.

ADELAIDE.—Max. in shade 111°·2 on 23rd.

SEVERE FROST IN NORTH AMERICA.

The two following reports speak for themselves and show a remarkable contrast with the winter on this side of the Atlantic:—

"WINTER IN THE WEST.—It is interesting and rather disquieting to note that 'zero weather' of an unprecedently severe character is prevalent over New York and the Eastern States of America. In the Empire City, on Monday morning, Feb. 17th, the thermometer stood at nearly seven degrees below zero, showing, as the popular expression has it, 39 degrees of frost. This is said to beat the Meteorological Office's previous records, which extend over 28 years. During that period no reading so low has been registered so late in the month of February. New York, however, was torrid in comparison with its 'Hinterland.' In the interior of New York State readings of 20 and 30 below zero are said to have been common; while at Saranac, in the Adirondacks, a record of 49 degrees below zero was obtained. This truly Winnipeg reading, representing 81 degrees below freezing point, is supposed to be the lowest ever recorded in the Eastern States. The cold wave seems to have extended steadily over the Continent from the North-Westward, where they have been having a very cold winter. It is to be hoped that its progress in our direction will be stayed, since, with vegetation so far advanced as it is, and young plants full of moisture, anything resembling a severe frost would be a grievous calamity. Nevertheless, it is a familiar fact that we import most of our climate from America. The cold snap recently experienced, however, the nearest approach to winter we have had this year, came from a different quarter. It originated at the North Pole, and, oddly enough, arrived here simultaneously with the announcement that Dr. Nansen was returning from its birthplace."—*Newcastle Chronicle, February 20th.*

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"SEVERE WINTER IN NEWFOUNDLAND.—The correspondent at St. John's of the Colonial Missionary Society, writing by the last mail, says:—'We are having a terrible winter here, perfect Arctic weather, worse than has been known for the past 40 years. Snow lies on the ground from 10 ft. to 15 ft. deep, country roads completely blocked, communication with the outposts almost entirely suspended owing to ice blockade. The suffering among the poorer classes is very great, especially in Fortune Bay, where the entire failure of the herring fishing has brought the people to the verge of starvation. We have done all we can in the way of relief, and I do not think there has been much actual suffering at our two stations; but the want in other destitute localities of the bay is said to be simply appalling.'" —*Times, March 3rd.*

THE INDEX TO THE METEOROLOGICAL MAGAZINE.

To judge by the number of replies we should certainly not proceed with the above, for we have received only 48, and

$$48 \times 2/6 = £6,$$

which, even if all the writing and preparing and editing were done gratuitously, would probably be less than a quarter of the cost.

But, on the other hand, the 48 requests that have come are from some of the highest authorities upon meteorology in nearly all parts of Europe. I should not think of letting a small pecuniary loss prevent my doing that which men of such eminence think desirable, and, therefore, I shall put the work in hand as soon as time permits.

I can at present form no definite idea as to the cost. The indices to the individual volumes make collectively about 90 pages, the general index will probably be considerably more—possibly 150 pages; and, if so, the cost, including paper and binding, may run up to £40 or so. But, as is always the case, friends are ready to help. One (I have not asked his permission, so I must not at present mention his name) has offered to assist in preparing the MS., and another has sent the following considerate letter:—

To the Editor of the Meteorological Magazine.

DEAR SIR,—As you ask for an expression of opinion with reference to a General Index for the magazine, I venture to say that I think there can be no question about its usefulness. As I am on the point of having the whole series bound I was, by a curious coincidence, only a few hours before I received the February number, debating whether I should have the "Title and Index" sheets of all the volumes bound up together in one Index Volume or not. If a complete Index for thirty years was issued it would solve that difficulty, and make it very easy to find any subject required.

I regret to see that you say it "won't pay." Might I suggest that if in the next number of the magazine you were to print an approximate estimate of the cost, there might be found some amongst your subscribers who would not only be willing to pay the half-crown for their own copy, but also to subscribe something in addition towards defraying the extra cost. At any rate I would be very willing to do so.

In concluding this letter, I trust I may, without presumption, be permitted to congratulate you on your long and successful career as Editor of this magazine, and to express a hope that you will be spared for many years to come to illustrate the cardinal doctrine of continuity which you have so persistently and successfully advocated in all matters pertaining to meteorology.—I am, yours sincerely,

CHARLES L. BROOK.

Harewood Lodge, Meltham. Feb 21st, 1896.

As already explained, no satisfactory estimate can be submitted

until the MS. is ready, but the sales ought to produce £15, and if so, the loss would probably be about £20 or £30. However, the first thing to be done is to put the work in hand, and if when the accounts come in there is a serious deficiency, I am quite sure that some of my correspondents will act upon Mr. Brook's suggestion, and come to the rescue.

Possibly some one may think that I ought to have known that few copies would be ordered, and to have made the price 5s., instead of 2s. 6d., and thereby diminished the probability of loss. I did consider that point, but I wanted the Index to be as widely useful as possible, both as regards its contents and its circulation. After every one has had the option of procuring a copy, it may be a question whether the price of any remaining in stock should not be doubled, or even quadrupled. They may become as scarce as the Indexes to our charming contemporary *Notes and Queries.*

G. J. SYMONS.

THE GREAT MADRID METEOR.

[We are glad to be able to supplement the notice in our February number by the following official report from the Director of the Observatory, which we have abridged, and annotated from the original which appeared in *Nature* of February 27th.—ED.].

ON Monday, February 10th, at 9h. 29m. 30s., there was observed an instantaneous bluish-white illumination in the atmosphere, so strong and vivid as to be visible in the inner rooms and in the open air.

The day was a magnificent one; blue sky, no wind, and a radiant sun.

Soon after there was plainly visible near the zenith, and some few degrees to the south-east, a white spot, like smoke, bearing north-east to south-west, of about 6° length and 1° wide; its form was semi-circular, with the convexity turned to the east. In the centre, and near the apex of the curve, it presented a condensation of a reddish colour, similar to that of clouds at sunset. The general appearance of the spot was that of a light cirro-cumulus.

At 9h. 30m. 40s. there was heard a deep and very strong detonation, accompanied by many others not so intense, similar to the noise produced by a large cannon-ball rolling along the upper storey of a house. This noise was very prolonged; it was found to last two minutes.

Meanwhile the vibration of windows and partitions (not the thick walls) was extraordinary, and the rattling of panes of glass alarming. In some houses all the window-panes were broken.

Judging from the time which elapsed between the light and the sound of the first detonation, the meteor exploded in the air at a

distance not less than 24 kilometres (15 miles); and this number is evidently too low.

Considering the aspect of the spot of smoke, it seems probable that the meteor proceeded from the south-east towards the north-west, and that near the zenith of Madrid it exploded.

Changed into smoke and dust, totally or partially, this smoke was carried away by the upper currents of the atmosphere to the east. We find here a splendid confirmation of the theory which supposes that, at the upper limits of the air, the wind moves from west to east.

A photograph of the phenomenon was taken by an amateur some few minutes after the explosion.

The cloud continued its course to the E.N.E., or E. ¼ N.E., dissolving gradually away, and at 3 p.m. [5½ hours afterwards! ED. *M.M.*] it was still perfectly visible like a light cirrus in the east some 20° above the horizon.

The compression of the atmosphere at the instant of the conflagration was indicated by the registering barometers. In the aneroids the trace is small, but the mercurial one shows that the column rose 1·6 mm (·063 in.), and lowered 0·7 mm (·028 in.), the amplitude of the total oscillation being 2·3 mm (·091 in.).

In the neighbourhood of Madrid some fragments of the meteor fell, and I have obtained one of them. Externally the fragment is of a black metallic aspect; inside it is of white stony appearance, with some brilliant points like nickel; it weighs 6·3 grams (¼ oz.).

From information received later, it appears that the phenomenon was visible in a large part of the Peninsula, from Sierra de Estrella (Portugal) to Denia on the Mediterranean coast, and from Segovia to Aguilas, or a distance of 700 kilometres (435 miles) from east to west, and 400 kilometres (250 miles) from north to south. These are inferior limits.

AUGUSTO ARCIMIS.

HIGH BAROMETER.

To the Editor of the Meteorological Magazine.

SIR,—There have been now two *consecutive* months, *i.e.*, January and February last, of abnormally high barometrical pressure; the 9 a.m. mean here for January being 30·361 in. and for February, 30·356 in., is not this very unusual?—Yours obediently,

K. I. MARKS.

9, *Randolph Gardens, Maida Vale, W., 4th March*, 1896.

[As far as we can trace, the only parallel case, and it is noteworthy as covering *three months*, instead of two, was in 1779, when the means were :—

January ... 30·387 in. February ... 30·332 in. March ... 30·270 in.

ED.]

ROYAL METEOROLOGICAL SOCIETY.

THE monthly meeting of this Society was held on Wednesday evening, February 19th, at the Institution of Civil Engineers, Westminster. Mr. Edward Mawley, F.R.H.S., President, in the chair.

The Report on the Phenological Observations for 1895 was presented by Mr. Mawley, in which it was shown that, owing to the great frost at the beginning of 1895, all the first spring flowers made their appearance very late; and it was not until the middle of June that this retardation was overcome. During July the dates recorded were, as a rule, exceptionally early. The yield of all the farm crops, except potatoes, was exceedingly poor. Pears and plums yielded badly, but there was a splendid crop of apples and also of all the small fruits. As regards vegetation generally, seldom has a year ended under conditions as favourable for the one succeeding it.

Mr. R. H. Scott, F.R.S., read a paper on the recent unusually high barometer readings in the British Isles, in which he stated that the daily weather chart for 6 p.m., on January 8th, was the first in these islands that ever showed 31 inches. The station was Stornoway, and by the next morning, all over the northern portions of Great Britain and Ireland, the barometers were above 31 inches. The highest reading of all was 31·119 in., photographically recorded at Glasgow at 9 a.m., on the 9th. The barometric pressure then gave way, and the region of highest readings moved southwards along our west coast and finally left the South of Ireland on the 15th. Weather throughout the period was mild, an unusual thing, with a very high barometer. At the end of the month a second anti-cyclone spread over the country, when the barometer rose to 30·96 in. at Cork. Reference was made to previous excessively high barometer readings in England and in Siberia, and it was stated that a reading of 31·62 in. at Barnaoul in Siberia, in 1877, was probably the highest ever observed.

Mr. R. Inwards, F.R.A.S., read a paper on "Turner's Representations of Lightning," which he considered to be remarkably true to nature, and demonstrated the same by placing a photograph of Turner's work side by side with a photograph of a real flash of lightning.

CLIMATOLOGICAL TABLE FOR THE BRITISH EMPIRE, OCTOBER, 1895.

STATIONS. (*Those in italics are South of the Equator.*)	Absolute. Maximum. Temp.	Absolute. Maximum. Date.	Absolute. Minimum. Temp.	Absolute. Minimum. Date.	Average. Max.	Average. Min.	Average. Dew Point.	Average. Humidity.	Absolute. Max. in Sun.	Absolute. Min. on Grass.	TotalRain. Depth.	TotalRain. Days.	Aver. Cloud.
	°		°		°	°	°	0-100	°	°	inches		
England, London	74·4	1	26·6	28	54·1	40·5	42·1	84	111·9	24·1	2·84	14	6·2
Malta	90·8	27	53·3	20	80·0	65·9	61·4	75	135·1	47·3	1·17	6	4·5
Mauritius	82·3	31	65·0	20	79·8	67·6	63·7	75	133·6	54·9	·64	11	5·4
Calcutta	91·3	6	67·6	8	85·9	73·3	69·8	73	150·7	60·9	2·79	5	3·6
Bombay	92·6	11	72·8	20	87·7	76·5	74·0	77	144·5	64·9	3·62	7	4·2
Ceylon, Colombo	88·2	19	72·3	...	85·0	74·6	72·0	83	157·0	69·0	30·36	30	8·2
Melbourne	86·6	12	39·1	4	71·1	50·3	47·3	66	136·0	31·0	·57	8	4·9
Adelaide	96·5	19	45·8	3	78·0	53·2	48·0	53	150·3	37·0	·38	8	3·7
Sydney	83·8	18	52·5	30	73·6	57·6	62·0	64	140·0	38·6	·64	10	3·2
Wellington	75·5	29	35·0	1	60·6	48·2	45·2	70	136·0	24·0	4·06	12	4·5
Auckland	69·0	28*a*	44·0	2	62·5	50·3	47·1	71	130·0	40·0	3·79	19	5·0
Jamaica, Kingston	93·5	4	71·4	24	88·0	73·5	71·7	82	...	...	7·21	15	5·4
Trinidad	91·0	4, 18	68·0	5, 21	88·9	71·0	72·9	79	170·0	66·0	10·89	16	...
Grenada	86·4	5	71·0	17	83·8	74·7	71·5	76	157·0	...	5·94	19	3·7
Toronto	65·8	2	23·2	21	51·1	35·1	34·3	72	87·2	17·4	1·04	11	5·6
New Brunswick, Fredericton	70·0	7	14·8	22	51·8	30·7	33·4	71	...	...	1·84	12	4·4
Manitoba, Winnipeg	75·3	12	11·0	28	50·5	26·1	...	...	...	...	·33	7	5·8
British Columbia, Esquimalt	70·1	18	33·2	29	55·9	42·1	45·7	92	...	...	·46	11	5·8

a—and 28.

REMARKS.

MALTA.—Adopted mean temp. 71°·0, 1°·5 above the average. Mean hourly velocity of wind 9·9 miles. Average temp. of sea 74°·6. Thunderstorms on 17th and 18th, and Lightning on 13th, 19th and 22nd. J. F. DOBSON.

Mauritius.—Mean temp. of air 1°·2 above, of dew point 1°·9 above, and rainfall 1·04 in. below, their respective averages. Mean hourly velocity of wind 9·8 miles, or 1·5 miles below average; extremes, 27·1 on 7th, and 0·0 on 11th; prevailing direction, E.S.E. C. MELDRUM, F.R.S.

CEYLON, COLOMBO.—Thunderstorms on the 8th, 9th and 28th. D. G. MANTELL.

Adelaide.—Mean temperature 3°·7 above the average of 38 years, and the highest ever recorded at Adelaide in October. Rainfall 1·52 in. below the average, having only once been less than in the present month. C. TODD, F.R.S.

Sydney.—Mean temperature 2°·3 above, humidity 5·6 below, and rainfall 2·24 in. below, their respective averages. The Colony generally is suffering from a severe drought since March last. H. C. RUSSELL, F.R.S.

Wellington.—Showery from 7th to 9th, otherwise fine up to the night of the 15th, from 15th to 25th wet weather, and the remainder fine. Prevailing winds N.W.; frequently strong. T and L on 25th and 31st. Mean temp. 0°·8 above, and rainfall ·31 in. below, the average. R. B. GORE.

Auckland.—A cool showery month. Mean temp. 1° below the average; rainfall half-an-inch above the average. T. F. CHEESEMAN.

JAMAICA, KINGSTON.—Mean hourly velocity of wind 3·0 miles. Rainfall in Kingston about the average, but in each of the four divisions the fall was about one-third above the average. R. JOHNSTONE.

TRINIDAD.—Rainfall 4·22 in. above the 30 years average. J. H. HART.

SUPPLEMENTARY TABLE OF RAINFALL, FEBRUARY, 1896.

[For the Counties, Latitudes, and Longitudes of most of these Stations, see *Met. Mag.*, Vol. XIV., pp. 10 & 11.]

Div.	STATION.	Total Rain.	Div.	STATION.	Total Rain.
		in.			in.
II.	Dorking, Abinger Hall .	·40	XI.	Lake Vyrnwy	1·31
,,	Birchington, Thor	·33	,,	Corwen, Rhug	·65
,,	Hailsham	·33	,,	Carnarvon, Cocksidia ...	1·06
,,	Ryde, Thornbrough	·29	,,	I. of Man, Douglas	2·18
,,	Emsworth, Redlands ...	·46	XII.	Stoneykirk, Ardwell Ho.	1·87
,,	Alton, Ashdell	·55	,,	New Galloway, Glenlee	3·23
III.	Oxford, Magdalen Col..	·31	,,	Lilliesleaf, Riddell	1·48
,,	Banbury, Bloxham	·46	XIII.	N. Esk Res. [Penicuick]	1·95
,,	Northampton, Sedgebrook	·52	,,	Edinburgh, Blacket Pl..	·85
,,	Alconbury	·49	XIV.	Glasgow, Queen's Park..	1·76
,,	Wisbech, Bank House...	·80	XV.	Inverary, Newtown	5·77
IV.	Southend	·68	,,	Oban, The Corran	4·24
,,	Harlow, Sheering..... ...	·50	,,	Islay, Gruinart Schools..	4·20
,,	Colchester, Lexden	·67	XVI.	Dollar.....	1·85
,,	Rendlesham Hall	·38	,,	Balquhidder, Stronvar...	4·00
,,	Diss	...	,,	Ballinluig	·99
,,	Swaffham	·69	,,	Dalnaspidal H.R.S.....	3·30
V.	Salisbury, Alderbury ...	·31	XVII.	Keith H.R.S.....	·89
,,	Bishop's Cannings	·50	,,	Forres H.R.S.	·34
,,	Blandford, Whatcombe .	·52	XVIII.	Fearn, Lower Pitkerrie..	·71
,,	Ashburton, Holne Vic...	1·24	,,	N. Uist, Loch Maddy ...	4·15
,,	Okehampton, Oaklands.	·88	,,	Invergarry.....	4·15
,,	Hartland Abbey	·99	,,	Aviemore H.R.S.	1·01
,,	Lynmouth, Glenthorne.	·62	,,	Loch Ness, Drumnadrochit	1·31
,,	Probus, Lamellyn	·75	XIX.	Invershin	·89
,,	Wellington, The Avenue	·56	,,	Scourie	2·86
,,	Wincanton, Stowell Rec.	·52	,,	Watten H.R.S.....	·76
VI.	Clifton, Pembroke Road	·55	XX.	Dunmanway, Coolkelure	4·91
,,	Ross, The Graig	·24	,,	Cork, Wellesley Terrace	1·70
,,	Wem, Clive Vicarage ...	·52	,,	Killarney, Woodlawn ...	3·08
,,	Cheadle, The Heath Ho.	1·72	,,	Caher, Duneske	1·34
,,	Worcester, Diglis Lock	·23	,,	Ballingarry, Hazelfort...	1·57
,,	Coventry, Coundon	·53	,,	Limerick, Kilcornan ...	1·34
VII.	Ketton Hall [Stamford]	·70	,,	Ennis	...
,,	Grantham, Stainby	·96	,,	Miltown Malbay	2·43
,,	Horncastle, Bucknall ...	·43	XXI.	Gorey, Courtown House	1·88
,,	Worksop, Hodsck Priory	·65	,,	Athlone, Twyford	1·52
VIII.	Neston, Hinderton	1·11	,,	Mullingar, Belvedere ...	1·87
,,	Southport, Hesketh Park	1·03	,,	Longford, Currygrane...	1·93
,,	Broughton-in-Furness ...	4·41	XXII.	Woodlawn	1·67
IX.	Ripon, Mickley.....	·52	,,	Crossmolina, Enniscoe ..	2·08
,,	Melmerby, Baldersby ...	·46	,,	Collooney, Markree Obs.	2·13
,,	Scarborough, Obs.	·57	,,	Ballinamore, Lawderdale	2·62
,,	Middleton, Mickleton ...	1·29	XXIII.	Lough Sheelin, Arley...	1·61
X.	Haltwhistle, Unthank...	1·72	,,	Warrenpoint.....	2·97
,,	Bamburgh	·55	,,	Seaforde.....	1·77
,,	Keswick, The Bank.....	3·27	,,	Belfast, Springfield	2·08
XI.	Llanfrechfa Grange	·65	,,	Bushmills, Dundarave..	2·59
,,	Llandovery	1·23	,,	Stewartstown	2·11
,,	Castle Malgwyn	1·51	,,	Killybegs	3·70
,,	Builth, Abergwesyn Vic.	3·29	,,	Lough Swilly, Carrablagh	3·18
,,	Rhayader, Nantgwillt...	2·17			

FEBRUARY, 1896.

Div.		STATIONS. [The Roman numerals denote the division of the Annual Tables to which each station belongs.]	RAINFALL. Total Fall.	Difference from average 1880-9.	Greatest Fall in 24 hours. Dpth	Date	Days on which ·01 or more fell.	TEMPERATURE. Max. Deg.	Date	Min. Deg.	Date.	No. of Nights below 32°. In shade.	On grass.
			inches.	inches.	in.								
I.	ENGLAND.	London (Camden Square) ...	·30	— 1·58	·08	20	8	56·4	28	23·2	26	9	16
II.		Maidstone (Hunton Court)...	·58	— 1·22	·25	21	3	...	...	...	...	...	...
,,		Strathfield Turgiss	·49	— 1·51	·19	8	11	57·6	28	17·1	26	13	19
III.		Hitchin	·37	— 1·38	·07	8	11	54·0	12	18·0	25	12	...
,,		Winslow (Addington)	·43	— 1·73	·16	8	8	56·0	12*a*	17·0	26	13	17
IV.		Bury St. Edmunds (Westley)	·83	— ·73	·39	29	8	53·0	8, 12	...	...	...	...
,,		Norwich (Brundall)	·47	...	·21	29	8	56·2	19	25·6	26	9	19
V.		Weymouth(LangtonHerring)	·37	— 2·23	·15	8	5	54·0	29	26·0	24*g*	8	...
,,		Torquay (Cary Green)	·46	...	·22	8	6	56·4	28	29·0	2	4	12
,,		Polapit Tamar [Launceston]..	·78	— 2·49	·26	19	9	56·1	10	22·4	24	7	12
VI.		Stroud (Upfield)	·37	— 2·19	·15	8	7	54·0	10*b*	25·0	26	11	...
,,		ChurchStretton(Woolstaston)	·54	— 1·91	·18	29	8	54·5	28	22·0	26	13	17
,,		Tenbury (Orleton)	·40	— 2·08	·14	20	9	58·1	12	24·5	2	12	14
VII.		Leicester (Barkby)	·57	— 1·24	·16	20	9	57·0	19	16·0	25	15	24
,,		Boston	·67	— 1·01	·25	29	6	55·0	19	22·0	26	13	...
,,		Hesley Hall [Tickhill].....	·77	— ·73	·22	28	8	55·0	8	19·0	26	14	...
VIII.		Manchester(PlymouthGrove)	1·79	— ·26	·62	29	11	55·0	9	22·0	18	14	16
IX.		Wetherby (Ribston Hall) ...	·26	— 1·32	·14	29	2	...	...	...	...	...	...
,,		Skipton (Arncliffe)	2·03	— 2·66	·73	29	13	..	...	...	...	...	...
,,		Hull (Pearson Park).	·66	— 1·14	·26	20	8	54·0	8, 9*a*	23·0	26	12	13
X.		Newcastle (Town Moor)	·62	— ·78	·31	20	5	...	...	...	...	...	...
,,		Borrowdale (Seathwaite).....	10·08	— 2·56	3·13	7	16	...	...	...	...	...	...
XI.	WALES.	Cardiff (Ely).....	1·05	— 2·14	·27	8	16	...	...	...	...	...	...
,,		Haverfordwest	1·18	— 2·94	·28	8	18	53·1	10	28·0	24*h*	6	15
,,		Aberystwith (Gogerddan) ...	1·41	— 1·85	·48	29	10	52·0	10*c*	...	..	.	...
,,		Llandudno.....	1·06	— ·86	·38	29	13	58·2	8	26·8	18	...	...
XII.	SCOTLAND.	Cargen [Dumfries]	2·20	— 1·45	·52	7	10	53·0	5	24·8	24	7	...
,,		Jedburgh (Sunnyside).....	1·06	— ·45	·45	20	7	52·0	7, 8*d*	24·0	19	8	...
XIV.		Colmonell	2·60	...	·77	29	14	59·0	11	23·0	20	...	...
XV.		Lochgilphead (Kilmory).....	4·85	— ·34	1·17	25	19	...	...	30·0	25	7	...
,,		Mull (Quinish).....	4·16	— 1·31	·78	25	18	...	...	...	...	...	...
XVI.		Loch Leven Sluices	1·30	— 1·45	·30	8	7	...	...	...	...	...	...
,,		Dundee (Eastern Necropolis)	1·00	— 1·10	·30	20	10	54·8	5	26·4	24	9	...
XVII.		Braemar	·83	— 2·53	·20	20	10	50·0	5	26·4	27	13	17
,,		Aberdeen (Cranford)	·96	...	·30	20	10	55·0	5, 7	28·0	27	7	...
XVIII		Strathconan [Beauly]	1·98	— 2·73	·56	28	12	...	...	...	...	...	...
,,		Glencarron Lodge.....	7·34	...	2·06	11	17	52·6	7	27·8	19	6	...
,,		Cawdor [Nairn]	·80	— 1·43	·17	29	12	...	...	...	...	...	...
XIX.		Dunrobin	1·86	— ·23	·63	25	10	54·0	11	29·0	29	7	...
,,		S. Ronaldsay (Roeberry).....	1·86	— ·78	·24	29	18	50·0	10*e*	27·0	28	4	...
XX.	IRELAND.	Darrynane Abbey.....	3·36	...	·67	25	17	...	...	...	...	...	...
,,		Waterford (Brook Lodge) ...	2·05	— 2·03	·82	25	10	58·0	12	29·0	4	2	...
,,		O'Briensbridge (Ross)	1·25	...	·32	25	12	...	...	...	...	...	...
XXI.		Carlow (Browne's Hill)	1·38	— 1·70	·57	25	9	...	...	...	...	...	...
,,		Dublin (FitzWilliam Square)	·87	— 1·48	·32	25	10	56·7	8	31·9	18	1	10
XXII.		Ballinasloe	1·63	— 1·15	·62	25	10	52·0	8, 28	29·0	1	5	...
,,		Clifden (Kylemore)	5·43	...	1·67	25	12	...	...	...	...	...	...
XXIII		Waringstown	1·26	— 1·19	·51	25	9	54·0	7*f*	30·0	24*i*	8	11
,,		Londonderry (Creggan Res.).	2·82	— ·21	·73	25	12	...	...	...	...	...	...
,,		Omagh (Edenfel)	2·18	— ·51	·63	25	11	54·0	11	31·0	17	1	6

+Shows that the fall was above the average ; —that it was below it.

a—and 19. *b*—and 12, 28. *c*—and 11, 21, 22. *d*—and 21. *e*—and 11. *f*—and 21, 29. *g*—and 25. *h*—and 27. *i*—and 26.

METEOROLOGICAL NOTES ON FEBRUARY, 1896.

ABBREVIATIONS.—Bar. for Barometer; Ther. for Thermometer; Max. for Maximum; Min. for Minimum; T for Thunder; L for Lightning; T S for Thunderstorm; R for Rain; H for Hail; S for Snow.

ENGLAND.

STRATHFIELD TURGISS.—The weather at first was dry and fair with slight showers at night, and with high temp. right through the middle of the month until the 23rd, when a very sharp but short snap of cold set in which lasted until the 29th. Primroses in flower on 6th, white dead nettle on 9th, lungwort on 29th; honey bee seen on 19th; solar halo on 27th.

ADDINGTON.—Another dry February, making six in the last 11 years with less than an inch of R; whereas during the previous 15 years there was only one similar instance, in 1871. The only sharp frosts were those on the 25th, 26th, and 27th. Dense fog on 6th and 10th, foggy on 11th and 18th.

BURY ST. EDMUNDS, WESTLEY.—A fine dry month with high barometer; a cold spell from 23rd to 27th.

NORWICH, BRUNDALL.—A very dry, mild month. R 1·32 in. deficient. The seventh February out of the last fourteen with less than an inch of rain. How is it that February is proverbially known as "Fill Dyke"?

WEYMOUTH, LANGTON HERRING.—A very calm month. Average temp. at 9 a.m. 39°·4, or 0°·1 above the average of 24 years. A cold snap occurred from the 23rd to the 27th inclusive. Bar. readings very high throughout, except from 19th to 22nd. Fogs on 9th, 10th, 18th, 20th, and 22nd. For the first two months of the year the rainfall is only 1·46 in., or a deficit of more than 70 per cent.

TORQUAY, CARY GREEN.—Rainfall 2·30 in. below the average. Mean temp. 43°·4, or 0°·4 above the average. Duration of sunshine 52 hours 10 minutes, being 30 hours 20 minutes below the average; 9 sunless days.

POLAPIT TAMAR [LAUNCESTON].—Generally calm and bright and very dry, the R being less than a quarter of the average. Slight fog early on 12th. Dense fog on 13th till noon, and on 14th till 10 a.m.

WOOLSTASTON.—A fine and seasonable winter month with frosty nights; very little rain fell till the last day. Mean temp. 39°·5.

TENBURY, ORLETON.—Another very dry month; the fourth February within 10 years with a R of less than half-an-inch. The first 14 days were very warm, but from the 15th to the end of the month the temp. was below the average, with the sharpest spell of frost of the winter from the 23rd to the 27th. The mean temp. of the month was about half-a-degree lower than the average. Fogs on four days, dense on 19th and 21st.

LEICESTER, BARKBY.—Already great deficiency of water. Mean temp. 38°·5.

MANCHESTER, PLYMOUTH GROVE.—Upon the whole, very fine, mild weather for the season. Thick fog on 14th, 15th, and 18th. Mean temp. 40°·5.

WALES.

HAVERFORDWEST.—This month, like January, was remarkable for dampness, mildness, and small rainfall. At times a good deal of wind prevailed, sometimes reaching the force of a moderate gale, and at times there was much fog. From the 17th to 19th the temp. was low at night and again from the 21st to the end, with a bitter easterly wind. E. or S.E. winds prevailed more or less during the month. The quantity of R that fell was very small, but not so small as in 1891 and 1895.

ABERYSTWITH, GOGERDDAN.—Very mild throughout the month, but very little sunshine.

SCOTLAND.

CARGEN [DUMFRIES].—An uneventful month. The first 16 days were exceptionally warm for the season, the mean temp. of the period being 44°, upwards of 20° higher than that of the corresponding period of 1895. With the exception of a pretty stiff breeze from S. on 7th and 8th the winds were light, westerly and southerly prevailing up to the 16th, northerly and easterly during the remainder. Barometrical pressure was unusually high. Sunshine was registered for only 29 hours, about one-third of the average. Vegetation during the first half made very rapid strides, but received a timely check after the 16th. Pastures very fresh and green.

JEDBURGH.—Up to the 23rd the weather was mild for the season; for the next five days it was cold but dry, with wind from S. or S.E. The barometer throughout was very high. A slight shower of S on the morning of 28th melted almost as it fell. Agricultural work far advanced.

COLMONELL.—Rainfall 1·25 in. below the average of 19 years. Mean temp. 43°·0. About an inch of S fell on 25th.

BRAEMAR.—Mean temp. 39°·0, 17°·7 above that of February, 1895.

ABERDEEN, CRANFORD.—The month was very mild.

S. RONALDSAY, ROEBERRY.—A very fine month until the last week, when southerly gales occurred. Mean temp. 41°·3.

IRELAND.

WATERFORD, BROOK LODGE.—A remarkably mild month, everything very forward. Mean temp. 45°·7.

O'BRIEN'S BRIDGE, ROSS.—A singularly fine month. Abundant sunshine, no frosts, everything forward as at the end of March.

DUBLIN.—A fine, dry, mild, often genial month. A complete contrast to February, 1895, which was the coldest experienced for 40 years. There was neither S nor H, and scarcely any frost in or near Dublin. The mean temp. (45°·2) was not less than 11° above that of February, 1895, while it was also 2°·4 above the average. Absolute drought prevailed from the 9th to the 18th inclusive, and three-eighths of the entire rainfall of the month was measured on the 25th. Foggy on eight days. Amount of cloud (6·6) almost exactly the average. High winds on eight days, but never reaching the force of a gale. Lunar halo on the 25th; faint aurora on the 18th.

OMAGH, EDENFEL.—Like January, the past month was more of a fine autumnal than of a wintry character; many days in their clear soft calmness would have done no discredit to the Riviera. The rain that fell was mostly at night, and frost was only once registered in the screen; a startling contrast to the 27 times of February, 1895.